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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,945

12/19/2007

Michael J. Banach

Q96450

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23373 7590 03/09/2010
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EXAMINER

WALKE, AMANDA C

ART UNIT

PAPER NUMBER

1795

NOTIFICATION DATE

DELIVERY MODE

03/09/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/588,945	Applicant(s) BANACH ET AL.	
	Examiner Amanda C. Walke	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-24 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 7-9, 11-18, 23, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirsch et al (5,192,581).

Hirsch et al disclose a method of forming an electronic device having a metallized substrate (copper/polyimide interconnect), having copper lines and pads in an array, wherein the device is prepared by a method employing the steps of:

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26. A process for the selective deposition of a metal on a substrate comprising the following steps in the sequence set forth:

- (a) providing a substrate with a top dielectric surface;**
- (b) coating the substrate with a protective layer;**
- (c) immersing the substrate in a solution of a complexing material which can complex with seed metal ions which can initiate electroless deposition;**
- (d) directing a laser beam at the protective layer in a pattern so that complexing material from the solution is deposited in the pattern on the irradiated protective layer;**
- (e) removing the substrate from the solution of complexing material and chemical all non-deposited complexing material off the substrate so that the deposited complexing material on the protective layer forms the pattern;**
- (f) placing the substrate in a solution containing seed metal ions so that the deposited complexing material becomes a catalyst film which can initiate electroless deposition;**
- (g) removing the substrate from the solution containing seed metal ions and cleaning any residual solution containing seed metal ions off the substrate;**
- (h) placing the substrate in an electroless plating bath so that an electrically conductive metal is deposited on the catalyst film without being deposited on the protective layer or the dielectric and without the plating bath removing the protective layer from the dielectric; and**
- (i) removing the substrate from the electroless plating bath wherein the only metal which adheres to the dielectric is formed in the pattern on the catalyst film.**

The protective layer is deposited using known methods including spraying, dipping, spinning, and is a curable/ thermally sensitive material such as polyimide, the catalyst layer may be deposited by spin, dip, or spray coating or other known methods, and may be patterned employing a Nd:YAG laser, which is infrared (column 5, line 56 to column 6, line 55).

Claims 11 and 16-18 are product by process claims:

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M.P.E.P. § 2113:

“Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)... “The Patent Office bears a lesser burden proof in making out a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289, 292 (Fed. Cir. 1983).

3. Claims 1-5, 7-9, 11-18, 23, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirsch et al (5,084,299).

Hirsch et al disclose a method of forming an electronic device having a metallized substrate (copper/polyimide interconnect), having copper lines and pads in an array, wherein the device is prepared by a method employing the steps of:

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8. A process for the selective deposition of a conductor on a substrate comprising the following steps in the sequence set forth:

- (a) coating the substrate with a mixture of a polymer and a seed metal, wherein the polymer is complexed with the seed metal by mixing the polymer and seed metal ions in solution and the seed metal is a metal which can initiate electroless plating selected from the group consisting of palladium, platinum, gold, rhodium, and any mixture thereof to form a layer of polymer-seed metal mixture.**
- (b) drying the polymer-seed metal mixture,**
- (c) selectively irradiating the polymer-seed metal mixture in a predetermined pattern,**
- (d) applying a chemical etch to a polymer-seed metal mixture so that the irradiated portions of the polymer-seed metal mixture etch at a slower rate than the non-irradiated portions of the polymer-seed metal mixture,**
- (e) removing the chemical etch and the etched polymer-seed metal mixture from the substrate wherein the polymer-seed metal mixture remaining on the substrate corresponds to the predetermined pattern, and**
- (f) placing the polymer-seed metal mixture remaining on the substrate in an electroless plating bath from the group consisting of copper, nickel and gold so that the desired conductor pattern is formed in the predetermined pattern.**

The catalyst layer is deposited using known methods including spraying, dipping, spinning, and may be patterned employing a Nd:YAG laser, which is infrared (column 3, line 10 to column 4, line 60).

Claims 11 and 16-18 are product by process claims:

M.P.E.P. § 2113:

“Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a

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different process.” *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)... “The Patent Office bears a lesser burden proof in making out a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289, 292 (Fed. Cir. 1983).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirsch et al (both the '299 and the '581) in view of either Esrom et al (EP 484808) or Chen et al (6,461,678) .

Both Hirsch et al references have been discussed above and teach that known deposition/coating methods may be employed in their methods, but fail to specifically disclose ink jetting.

Both Esrom et al and Chen et al disclose methods of forming catalytic or seed layers such as those described by the primary references that are precursors for electroless plating, and teach that ink jetting is a commonly employed deposition method for such a composition.

It would have been obvious to one of ordinary skill in the art to prepare a device by the method of either Hirsch et al reference, choosing to employ an ink jet coating/ deposition method for the catalyst layer.

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6. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okubi et al (4,830,880).

Okubi et al discloses a catalytic polymeric coating comprising a solvent, additives, and organic metal complexes, which are to be employed as a coating for electroless plating.

An electroless plating method which comprises applying to a substrate a polymer composition comprising 100 parts by weight of a polymer and an organic metal complex in an amount of from 0.001 to 50 parts by weight as metal, pyrolytically decomposing the organic metal complex at a temperature of from 50° to 500° C. to form plating catalyst metal nuclei on the substrate, removing the dried polymer coating, and conducting electroless plating of the substrate.

As the additive, a pigment such as carbon black, talc, silica or barium sulfate, an anti-foaming agent or surfactant, may be mentioned. Further, a reducing agent or a radical generating agent capable of liberating plating catalyst metal nuclei from the organic metal complex, may also be mentioned as an additive.

It would have been obvious to one of ordinary skill in the art to prepare the material of Okubi et al choosing to employ carbon black as an additive, given the teachings of the reference.

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirsch et al ('299 or '581) in view of Okubi et al.

Both Hirsch et al references teach that the catalyst precursor layer is comprised of metal seed ions in a polymer film, and is not limited to any specific film, or additives.

Okubi et al has been discussed above as teaching a similar film, and that various additives that are known in the art include carbon black, therefore, it would have been obvious to one of ordinary skill in the art to prepare the material of Hirsch et al choosing to employ in the method

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(with Nd:YAG infrared exposure), an additive such as carbon black in the catalyst layer as taught by Okubi et al.

Allowable Subject Matter

8. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C. Walke whose telephone number is 571-272-1337. The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amanda C Walke
Primary Examiner
Art Unit 1795

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/Amanda C Walke/

Primary Examiner, Art Unit 1795